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EXAMINER
WORTMAN, DONNA C

ART UNIT	PAPER NUMBER
1648	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/938,131	ZMUDA ET AL.	
	Examiner	Art Unit	
	Donna C. Wortman, Ph.D.	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claims 1-15 as originally filed are pending and under examination.

The abstract of the disclosure is objected to because it is too long and because it has more than one paragraph. Correction is required. See MPEP § 608.01(b). The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 150 words.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because while it recites immunoassay steps, making the recitation of "utilizing an immunoassay" redundant, it does not recite any steps that actually detect molecules capable of recognizing multiple classes of anti-HCV molecules although such is recited in the preamble. Claim 1 is indefinite in reciting "the labeled fluid" in step (c) without antecedent in the preceding part of the claim, which recites "to label antibodies" in step (b). Claim 1 is indefinite in reciting "comprised of" in step (c), since it is not clear whether it is intended that "comprised of" means the same as "comprising," i.e., is open language, or means the same as "composed of," i.e., is closed language. If Applicant intends open language, it is suggested that the claim be amended to read "comprising" in order to prevent any confusion. Claim 1 is incomplete because it does not recite language that would serve to correlate the result obtained in

step (e) with the preamble, e.g., "wherein the presence of a binding reaction between human antibodies and peptide antigens indicates HCV exposure."

Claims 1, 7, and 11 are indefinite because not all the steps are recited as active process steps. It is suggested that "introduction of" be amended to read "introducing"; "selective capture of" be amended to read "selectively capturing"; and "detection of" be amended to read "detecting," as appropriate for the designated process steps.

Claim 2 is indefinite because it is not clear whether an additional step is being claimed, and, if so, it is not clear when the step is to be performed in relation to steps (a)-(e) of claim 1. Claim 2 is indefinite because it does not recite any active process step. Claim 2 is indefinite because it is not clear whether "a reporter molecule" as recited in claim 2 is the same as the "labeling molecule" of step (b) of claim 1.

Claim 6 is indefinite because it recites the abbreviation "AP" without explanation. For improved clarity, the abbreviation should be accompanied by the appropriate terminology written out in full the first time it appears in the claims. Applicant is cautioned against the introduction of new matter when amending the claims.

Claim 7 is indefinite in reciting "the labeled fluid" in step (c) without antecedent in the preceding part of the claim, which recites "to label antibodies" in step (b). Claim 7 is indefinite in reciting "comprised of" in step (c), since it is not clear whether it is intended that "comprised of" means the same as "comprising," i.e., is open language, or means the same as "composed of," i.e., is closed language. If Applicant intends open language, it is suggested that the claim be amended to read "comprising" in order to prevent any confusion. Claim 7 is indefinite in reciting "anti-HCV molecules ... that

require at least one epitope" since it is not clear what "require" means in this context. It is suggested that the claim be amended to recite "specifically bind" instead of "require" since it would appear that specific binding is necessary.

Claim 8 is indefinite because it is not clear whether an additional step is being claimed, and, if so, it is not clear when the step is to be performed in relation to steps (a)-(e) of claim 7. Claim 8 is indefinite because it does not recite any active process step. Claim 8 is indefinite because it is not clear whether "a reporter molecule" as recited in claim 8 is the same as the "labeling molecule" of step (b) of claim 7.

Claims 7-10 are confusing because the recited limitations of using a non-antibody molecule to "tag all classes of antibodies" (claim 8), wherein the molecule is Protein LA (claim 9), or of using anti-human IgG+IgM+IgA antibody cocktail (claim 10) would appear to contradict the purpose of claim 7, which recites "screening for the presence of anti-HCV molecules of the IgA class." Practicing claims 8-10 as recited would result in labeling all antibody classes, not just IgA as recited in claim 7, making it entirely unclear what method Applicant intends to claim.

Claim 11 is indefinite because it recites "A method for determining the genotype of HCV virus in a patient" but does not recite sufficient steps for accomplishing genotype determination; the steps are identical to those in claim 1 which recites in the preamble "A method for screening for HCV exposure." Claim 11 is also indefinite because it recites "comprised of" in step (c), for the same reasons discussed in the rejection of claim 1, above.

Claim 15 is indefinite because it recites "comprised of" in part (b), for the same reasons discussed in the rejection of claim 1, above.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5, 6, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McIntyre et al. (European Journal of Clinical Microbiology and Infectious Diseases 15(11):882-884, 1996), cited on PTO 892, in view of US Patent 5,942,407 to Liotta et al., cited on PTO 892, and of US Patent 5,695,930 to Weinstein et al., cited on PTO 1449. McIntyre et al. disclose an immunoassay to detect hepatitis C virus antibodies in oral fluid that differs from the claimed immunoassay only in not specifically disclosing the use of a flow through affinity matrix, generation or absence of light to detect antibody quantity and distribution (claim 3), an undiluted saliva sample

(claim 5), and molecules capable of recognizing multiple classes of anti-HCV antibodies, which may be an enzyme conjugated goat anti-human IgG+IgM+IgA antibody cocktail (claim 6) to detect human antibodies. Liotta et al. disclose a flow-through affinity matrix that may be used in a light-emitting immunoassay. Weinstein et al. disclose the use of goat anti-human IgG, IgA and IgM conjugated to alkaline phosphatase to detect human anti-viral antibodies in saliva (col. 8, line 65-col. 9, line 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the flow through affinity matrix device and the light-emitting immunoassay of Liotta et al., and the goat anti-human IgG, IgA, and IgM enzyme conjugate of Weinstein et al., in the assay of McIntyre because Liotta teaches the device and light-emitting method as being generally applicable for detection of antibodies, for example, and because Weinstein et al. demonstrate that the use of the goat anti-human antibody cocktail results in a particularly sensitive and rapid immunoassay for detecting anti-viral antibodies in saliva. Using diluted or undiluted specimen is a matter of routine optimization of a result-effective variable in a given setting (McIntyre, page 883, col. 1, second full paragraph; see MPEP 2144.05).

Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over McIntyre et al. in view of Liotta et al. and Weinstein et al. as applied to claim 1 above, and further in view of US Patent No. 5,965,390 to Bjorck et al., cited on PTO 892. McIntyre et al., Liotta et al., and Weinstein et al. do not teach use of the labeled non-antibody protein Protein LA to detect all classes of antibodies. Bjorck et al. disclose the recombinant Protein LA which is capable of binding to and detecting the presence of

multiple classes of antibodies in immunoassays. It would have been obvious to one of ordinary skill in the art to substitute the labeled Protein LA of Bjorck et al. for the enzyme conjugated goat anti-human IgG+IgM+IgA of Weinstein et al. in the assay taught by McIntyre et al., Liotta et al., and Weinstein et al. for expected equivalent result since both Protein LA and goat anti-human IgG+IgM+IgA are capable of binding multiple classes of human antibodies.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taliani et al. (Journal of Hepatology 26(6):1200-1206, 1997), cited on PTO 892, in view of US Patent 5,942,407 to Liotta et al. Taliani et al. teach a method of testing oral fluid samples for human anti-HCV IgA but do not specifically disclose the use of a flow through affinity matrix on which HCV peptide antigens are immobilized. Liotta discloses a flow-through affinity matrix that may be used in a light-emitting immunoassay. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the flow through affinity matrix of Liotta et al. to immobilize HCV antigens for use in the anti-HCV IgA assay of Taliani et al. because Liotta discloses the device as generally applicable for use in immunoassays.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,054,264 to Chien et al., cited on PTO 1449, in view of McIntyre et al. and of US Patent No. 5,942,407 to Liotta et al., both cited above. Chien et al. disclose HCV type-specific peptides and their use to determine the presence of genotype-specific antibodies in an antibody-containing sample, which may be saliva, as an indication of the genotype of the HCV with which the patient is infected. Chien does not specifically

exemplify detection of HCV-genotype specific antibodies in oral fluid, nor specifically disclose a flow through affinity matrix for immobilization of HCV antigen. The teachings of McIntyre et al. and of Liotta et al. are discussed above. It would have been obvious to one of ordinary skill in the art at the time the inventions was made to have used the HCV type-specific peptides of Chien et al. in the assay of McIntyre et al. and Liotta et al. because Chien suggests use of saliva as a an antibody-containing sample, and in order to take advantage of the convenience of an oral fluid-based assay to determine such antibodies, and because Liotta teaches that flow through affinity matrix is suitable for immunoassays in general.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,054,264 to Chien et al., McIntyre et al. and Liotta et al. as applied to claim 11, above, and further in view of US Patent No. 5,965,390 to Bjorck et al. Chien, McIntyre, and Liotta do not teach use of the labeled non-antibody protein Protein LA to detect all classes of antibodies. Bjorck et al. disclose the recombinant Protein LA which is capable of binding to and detecting the presence of multiple classes of antibodies in immunoassays (see, e.g., Fig. 5a). It would have been obvious to one of ordinary skill in the art to use Protein LA in place of the anti-IgG reagent of Chien et al., McIntyre et al. and Liotta et al. in order to improve the assay sensitivity by detecting multiple classes of immunoglobulins at the same time.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al. McIntyre et al, and Liotta et al. as applied to claim 11, above, and further in view of Weinstein et al. Chien, McIntyre, and Liotta do not teach use of enzyme-conjugated

goat anti-human IgG+IgM+IgA antibody for detection of human anti-HCV antibodies. Weinstein et al. disclose the use of goat anti-human IgG, IgA and IgM conjugated to alkaline phosphatase to detect human anti-viral antibodies in saliva (col. 8, line 65-col. 9, line 3). It would have been obvious to one of ordinary skill in the art to substitute the alkaline phosphatase conjugated goat anti-human antibody cocktail of Weinstein et al. in place of the anti-IgG reagent of Chien et al., McIntyre et al. and Liotta et al. in order to improve the assay sensitivity by detecting multiple classes of immunoglobulins at the same time.

No rejection over prior art is offered for claims 8-10 because of their lack of clarity as discussed above. One of skill in the art would not be motivated to label all classes of antibodies for detection in order to detect IgA.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 4,446,232 to Liotta teaches a flow-through affinity matrix for immunoassays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donna C. Wortman, Ph.D. whose telephone number is 703-308-1032. The examiner can normally be reached on Monday-Thursday, 7:30-5:00 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on 703-308-4027. The fax phone numbers

for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Donna C. Wortman, Ph.D.
Primary Examiner
Art Unit 1648

dcw
November 1, 2002